

Parallel And Concurrent Programming In Haskell Techniques For Multicore Multithreaded Simon Marlow

Learn the basics of parallel programming in Java to write more efficient, performant code.

"Clojure programming ... This functional programming language not only lets you take advantage of Java libraries, services, and other JVM resources, it rivals other dynamic languages such as Ruby and Python. With this comprehensive guide, you'll learn Clojure fundamentals with examples that relate it to languages you already know"--P. [4] of cover.

Learn the art of building concurrent applications using Scala About This Book Make the most of Scala by understanding its philosophy and harnessing the power of multicores Get acquainted with cutting-edge technologies in the field of concurrency, through practical, real-world applications Get this step-by-step guide packed with pragmatic examples Who This Book Is For If you are a Scala programmer with no prior knowledge about concurrent programming, or seeking to broaden your existing knowledge about concurrency, this book is for you. Basic knowledge of the Scala programming language will be helpful. Also if you have a solid knowledge in another programming language, such as Java, you should find this book easily accessible. What You Will Learn Get to grips with the fundamentals of concurrent programming on modern multiprocessor systems Build high-performance concurrent systems from simple, low-level concurrency primitives Express asynchrony in concurrent computations with futures and promises Seamlessly accelerate sequential programs by using data-parallel collections Design safe, scalable, and easy-to-comprehend in-memory transactional data models Transparently create distributed applications that scale across multiple machines Integrate different concurrency frameworks together in large applications Develop and implement scalable and easy-to-understand concurrent applications in Scala 2.12 In Detail Scala is a modern, multiparadigm programming language designed to express common programming patterns in a concise, elegant, and type-safe way. Scala smoothly integrates the features of object-oriented and functional languages. In this second edition, you will find updated coverage of the Scala 2.12 platform. The Scala 2.12 series targets Java 8 and requires it for execution. The book starts by introducing you to the foundations of concurrent programming on the JVM, outlining the basics of the Java Memory Model, and then shows some of the classic building blocks of concurrency, such as the atomic variables, thread pools, and concurrent data structures, along with the caveats of traditional concurrency. The book then walks you through different high-level concurrency abstractions, each tailored toward a specific class of programming tasks, while touching on the latest advancements of async programming capabilities of Scala. It also covers some useful patterns and idioms to use with the techniques described. Finally, the book presents an overview of when to use which concurrency library and demonstrates how they all work together, and then presents new exciting approaches to building concurrent and distributed systems. Style and approach The book provides a step-by-step introduction to concurrent programming. It focuses on easy-to-understand examples that are pragmatic and applicable to real-world applications. Different topics are approached in a bottom-up fashion, gradually going from the simplest foundations to the most advanced features. Parallel programming unlocks a program's ability to execute multiple instructions simultaneously. It increases the overall processing throughput and is key to writing faster and more efficient applications. This training course introduces the basics of concurrent and parallel programming in C++, providing the foundational knowledge you need to write more efficient, performant code. Instructors Barron and Olivia Stone explain concepts like threading and mutual exclusion in a fun and informative way, relating them to everyday activities you perform in the kitchen. To cement the ideas, they demo them in action using C++.

Learning Concurrent Programming in Scala - Second Edition
Parallel and Concurrent Programming with C++ Part 1

Concurrent Programming: Algorithms, Principles, and Foundations
Advanced Functional Programming

Parallel and Concurrent Programming with Python 2

This bestseller has been updated and revised to cover all the latest changes to C++ 14 and 17! C++ Concurrency in Action, Second Edition teaches you everything you need to write robust and elegant multithreaded applications in C++17. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology You choose C++ when your applications need to run fast. Well-designed concurrency makes them go even faster. C++ 17 delivers strong support for the multithreaded, multiprocessor programming required for fast graphic processing, machine learning, and other performance-sensitive tasks. This exceptional book unpacks the features, patterns, and best practices of production-grade C++ concurrency. About the Book C++ Concurrency in Action, Second Edition is the definitive guide to writing elegant multithreaded applications in C++. Updated for C++ 17, it carefully addresses every aspect of concurrent development, from starting new threads to designing fully functional multithreaded algorithms and data structures. Concurrency master Anthony Williams presents examples and practical tasks in every chapter, including insights that will delight even the most experienced developer. What's Inside Full coverage of new C++ 17 features Starting and managing threads Synchronizing concurrent operations Designing concurrent code Debugging multithreaded applications About the Reader Written for intermediate C and C++ developers. No prior experience with concurrency required. About the Author Anthony Williams has been an active member of the BSI C++ Panel since 2001 and is the developer of the just:thread Pro extensions to the C++ 11 thread library. Table of Contents Hello, world of concurrency in C++ Managing threads Sharing data between threads Synchronizing concurrent operations The C++ memory model and operations on atomic types Designing lock-based concurrent data structures Designing lock-free concurrent data structures Designing concurrent code Advanced thread management Parallel algorithms Testing and debugging multithreaded applications

Summary Scala in Action is a comprehensive tutorial that introduces Scala through clear explanations and numerous hands-on examples. Because Scala is a rich and deep language, it can be daunting to absorb all the new concepts at once. This book takes a "how-to" approach, explaining language concepts as you explore familiar programming challenges that you face in your day-to-day work. About the Technology Scala runs on the JVM and combines object-orientation with functional programming. It's designed to produce succinct, type-safe code, which is crucial for enterprise applications. Scala implements Actor-based concurrency through the amazing Akka framework, so you can avoid Java's messy threading while interacting seamlessly with Java. About this Book Scala in Action is a comprehensive tutorial that introduces the language through clear explanations and numerous hands-on examples. It takes a "how to" approach, explaining language concepts as you explore familiar programming tasks. You'll tackle concurrent programming in Akka, learn to work with Scala and Spring, and learn how to build DSLs and other productivity tools. You'll learn both the language and how to use it. Experience with Java is helpful but not required. Ruby and Python programmers will also find this book accessible. What's Inside A Scala tutorial How to use Java and Scala open source libraries How to use SBT Test-driven development Debugging Updated for Scala 2.10 Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Author Willanjan Raychoudhuri is a skilled developer, speaker, and an avid polyglot programmer who works on production systems. Table of Contents PART 1 SCALA: THE BASICS Why Scala? Getting started OOP in Scala Having fun with functional data structures Functional programming PART 2 WORKING WITH SCALA Building web applications in functional style Connecting to a database Building scalable and extensible components Concurrency programming in Scala Building confidence with testing PART 3 ADVANCED STEPS

Interoperability between Scala and Java Scalable and distributed applications using Akka Here, one of the leading figures in the field provides a comprehensive survey of the subject, beginning with prepositional logic and concluding with concurrent programming. It is based on graduate courses taught at Cornell University and is designed for use as a graduate text. Professor Schneider emphasises the use of formal methods and assertional reasoning using notation and paradigms drawn from programming to drive the exposition, while exercises at the end of each chapter extend and illustrate the main themes covered. As a result, all those interested in studying concurrent computing will find this an invaluable approach to the subject. Multicore microprocessors are now at the heart of nearly all desktop and laptop computers. While these chips offer exciting opportunities for the creation of newer and faster applications, they also challenge students and educators. How can the new generation of computer scientists growing up with multicore chips learn to program applications that exploit this latent processing power? This unique book is an attempt to introduce concurrent programming to first-year computer science students, much earlier than most competing products. This book assumes no programming background but offers a broad coverage of Java. It includes over 150 numbered and numerous inline examples as well as more than 300 exercises categorized as "conceptual," "programming," and "experiments." The problem-oriented approach presents a problem, explains supporting concepts, outlines necessary syntax, and finally provides its solution. All programs in the book are available for download and experimentation. A substantial index of at least 5000 entries makes it easy for readers to locate relevant information. In a fast-changing field, this book is continually updated and refined. The 2014 version is the seventh "draft edition" of this volume, and features numerous revisions based on student feedback. A list of errata for this version can be found on the Purdue University Department of Computer Science website.

Learning Scala Programming

A survey of languages for concurrent programming

Clojure Programming

A POSIX Standard For Better Multiprocessing

Dissertation for the degree of Master of Science

Functional languages help developers support concurrency by encouraging immutable data structures that can be passed between threads without having to worry about a shared state, all while avoiding side effects. Concurrency in .NET teaches readers how to build concurrent and scalable programs in .NET using the functional paradigm. This intermediate-level guide is aimed at developers, architects, and passionate computer programmers. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Parallel and Concurrent Programming in Haskell Techniques for Multicore and Multithreaded Programming O'Reilly Media, Inc."

Concurrent C is a superset of C that provides parallel programming facilities such as those for the declaring and creating processes, for process synchronization and interaction, and for process termination and abortion. Concurrent C was designed for the effective utilization of multiprocessors and multicomputers. Concurrent C, as a compile-time option, also works with C++, an object-oriented superset of C.

Software -- Programming Languages.

Asynchronous, Parallel, and Multithreaded Programming

Functional Concurrency in .Net

Learn the Ultimate Language and Become a Better Programmer

Concurrent Programming in ML

If you have a working knowledge of Haskell, this hands-on book shows you how to use the language's many APIs and frameworks for writing both parallel and concurrent programs. You'll learn how parallelism exploits multicore processors to speed up computation-heavy programs, and how concurrency enables you to write programs with threads for multiple interactions. Author Simon Marlow walks you through the process with lots of code examples that you can run, experiment with, and extend. Divided into separate sections on Parallel and Concurrent Haskell, this book also includes exercises to help you become familiar with the concepts presented: Express parallelism in Haskell with the Eval monad and Evaluation Strategies Parallelize ordinary Haskell code with the Par monad Build parallel array-based computations, using the Repa library Use the Accelerate library to run computations directly on the GPU Work with basic interfaces for writing concurrent code Build trees of threads for larger and more complex programs Learn how to build high-speed concurrent network servers Write distributed programs that run on multiple machines in a network

This book is devoted to the most difficult part of concurrent programming, namely synchronization concepts, techniques and principles when the cooperating entities are asynchronous, communicate through a shared memory, and may experience failures. Synchronization is no longer a set of tricks but, due to research results in recent decades, it relies today on sane scientific foundations as explained in this book. In this book the author explains synchronization and the implementation of concurrent objects, presenting in a uniform and comprehensive way the major theoretical and practical results of the past 30 years. Among the key features of the book are a new look at lock-based synchronization (mutual exclusion, semaphores, monitors, path expressions); an introduction to the atomicity consistency criterion and its properties and a specific chapter on transactional memory; an introduction to mutex-freedom and associated progress conditions such as obstruction-freedom and wait-freedom; a presentation of Lamport's hierarchy of safe, regular and atomic registers and associated wait-free constructions; a description of numerous wait-free constructions of concurrent objects (queues, stacks, weak counters, snapshot objects, renaming objects, etc.); a presentation of the computability theory of concurrent objects including the notions of universal construction, consensus number and the associated Herlihy's hierarchy; and a survey of failure detector-based constructions of consensus objects. The book is suitable for advanced undergraduate students and graduate students in computer science or computer engineering, graduate students in mathematics interested in the foundations of process synchronization, and practitioners and engineers who need to produce correct concurrent software. The reader should have a basic knowledge of algorithms and operating systems.

An essential reader containing 19 important papers on the invention and early development of concurrent programming and its relevance to computer science and computer engineering. All of them are written by the pioneers in concurrent programming, including Brinch Hansen himself, and have introductions added that summarize the papers and put them in perspective. The editor provides an overview chapter and neatly places all developments in perspective with chapter introductions and expository apparatus. Essential resource for graduates, professionals, and researchers in CS with an interest in concurrent programming principles. A familiarity with operating system principles is assumed.

If you're one of the many developers uncertain about concurrent and multithreaded development, this practical cookbook will change your mind. With more than 75 code-rich recipes, author Stephen Cleary demonstrates parallel processing and asynchronous programming techniques, using libraries and language features in .NET 4.5 and C# 5.0. Concurrency is becoming more common in responsive and scalable application development, but it's been extremely difficult to code. The detailed solutions in this cookbook show you how modern tools raise the level of abstraction, making concurrency much easier than before. Complete with ready-to-use code and discussions about how and why the solution works, you get recipes for using: async and await for asynchronous operations Parallel programming with the Task Parallel Library The TPL Dataflow library for creating dataflow pipelines Capabilities that Reactive Extensions build on top of LINQ Unit testing with concurrent code Interop scenarios for combining concurrent approaches Immutable, threadsafe, and producer/consumer collections Cancellation support in your concurrent code Asynchronous-friendly Object-Oriented Programming Thread synchronization for accessing data

Parallel and Concurrent Programming in Haskell

Clojure for the Brave and True

Design Principles and Patterns

An Introduction to Problem Solving in Java with a Focus on Concurrency, 2014

Concurrent Programming on Windows

This book is a must-have tutorial for software developers aiming to write concurrent programs in Scala, or broaden their existing knowledge of concurrency. This book is intended for Scala programmers that have no prior knowledge about concurrent programming, as well as those seeking to broaden their existing knowledge about concurrency. Basic knowledge of the Scala programming language will be helpful. Readers with a solid knowledge in another programming language, such as Java, should find this book easily accessible.

Concurrent Programming ML (CML), included as part of the SML of New Jersey (SML/NJ) distribution, combines the best features of concurrent programming and functional programming. This practical, "how-to" book focuses on the use of concurrency to implement naturally concurrent applications. In addition to a tutorial introduction to programming in CML, the book presents three extended examples using CML for practical systems programming: a parallel software build system, a simple concurrent window manager, and an implementation of distributed tuple spaces. This book also illustrates advanced SML programming techniques, and includes a chapter on the implementation of concurrency using features provided by the SML/NJ system. It will be of interest to programmers, students, and professional researchers working in computer language development.

Exploring how concurrent programming can be assisted by language-level techniques, Introduction to Concurrency in Programming Languages presents high-level language techniques for dealing with concurrency in a general context. It provides an understanding of programming languages that offer concurrency features as part of the language definition. The book supplies a conceptual framework for different aspects of parallel algorithm design and implementation. It first addresses the limitations of traditional programming techniques and models when dealing with concurrency. The book then explores the current state of the art in concurrent programming and describes high-level language constructs for concurrency. It also discusses the historical evolution of hardware, corresponding high-level techniques that were developed, and the connection to modern systems, such as multicore and manycore processors. The remainder of the text focuses on common high-level programming techniques and their application to a range of algorithms. The authors offer case studies on genetic algorithms, fractal generation, cellular automata, game logic for solving Sudoku puzzles, pipelined algorithms, and more. Illustrating the effect of concurrency on programs written in familiar languages, this text focuses on novel language abstractions that truly bring concurrency into the language and aid analysis and compilation tools in generating efficient, correct programs. It also explains the complexity involved in taking advantage of concurrency with regard to program correctness and performance.

Write more effective programs that execute multiple instructions simultaneously. Learn the fundamentals of parallel and concurrent programming in Python.

Code You Can Believe In

Learning Concurrent Programming In Scala

Simple Solutions to Difficult Problems In Java 8 and 9

Create faster programs using concurrency, asynchronous, multithreading, and parallel programming

The Origin of Concurrent Programming

Parallel programming is key to writing faster and more efficient applications. This course, the second in a series from instructors Barron and Olivia Stone, introduces more advanced techniques for parallel and concurrent programming in Python. Barron and Olivia explain concepts like condition variables, semaphores, barriers, and thread pools in a fun and informative way, relating them to everyday activities you perform in the kitchen. They also explain how to evaluate your code's performance and design more efficient parallel programs from the start with techniques like partitioning. To cement the ideas, they demo them in action using Python-closing the course with a variety of coding challenges. Each lesson is short and practical, driving home the theory with hands-on techniques.

For weeks, months--nay!--from the very moment you were born, you've felt it calling to you. At long last you'll be united with the programming language you've been longing for: Clojure! As a Lisp-style functional programming language, Clojure lets you write robust and elegant code, and because it runs on the Java Virtual Machine, you can take advantage of the vast Java ecosystem. Clojure for the Brave and True offers a "desert-first" approach: you'll start playing with real programs immediately, as you steadily acclimate to the abstract but powerful features of Lisp and functional programming. Inside you'll find an offbeat, practical guide to Clojure, filled with quirky sample programs that catch cheese thieves and track glittery vampires. Learn how to: -Wield Clojure's core functions -Use Emacs for Clojure development -Write macros to modify Clojure itself -Use Clojure's tools to simplify concurrency and parallel programming Clojure for the Brave and True assumes no prior experience with Clojure, the Java Virtual Machine, or functional programming. Are you ready, brave reader, to meet your true destiny? Grab your best pair of parentheses--you're about to embark on an epic journey into the world of Clojure!

Immerse yourself in the world of Python concurrency and tackle the most complex concurrent programming problems Key FeaturesExplore the core syntaxes, language features and modern patterns of concurrency in PythonUnderstand how to use concurrency to keep data consistent and applications responsiveUtilize application scaffolding to design highly-scalable programs Book Description Python is one of the most popular programming languages, with numerous libraries and frameworks that facilitate high-performance computing. Concurrency and parallelism in Python are essential when it comes to multiprocessing and multithreading; they behave differently, but their common aim is to reduce the execution time. This book serves as a comprehensive introduction to various advanced concepts in concurrent engineering and programming. Mastering Concurrency in Python starts by introducing the concepts and principles in concurrency, right from Amdahl's Law to multithreading programming, followed by elucidating multiprocessing programming, web scraping, and asynchronous I/O, together with common problems that engineers and programmers face in concurrent programming. Next, the book covers a number of advanced concepts in Python concurrency and how they interact with the Python ecosystem, including the Global Interpreter Lock (GIL). Finally, you'll learn how to solve real-world concurrency problems through examples. By the end of the book, you will have gained extensive theoretical knowledge of concurrency and the ways in which concurrency is supported by the Python language what you will learnExplore the concepts of concurrency in programmingExplore the core syntax and features that enable concurrency in PythonUnderstand the correct way to implement concurrencyAbstract methods to keep the data consistent in your programAnalyze problems commonly faced in concurrent programmingUse application scaffolding to design highly-scalable programsWho this book is for This book is for developers who wish to build high-performance applications and learn about single-core, multicore programming or distributed concurrency. Some experience with Python programming language is assumed.

"When you begin using multi-threading throughout an application, the importance of clean architecture and design is critical. . . . This places an emphasis on understanding not only the platform's capabilities but also emerging best practices. Joe does a great job interspersing best practices alongside theory throughout his book." -- From the Foreword by Craig Mundie, Chief Research and Strategy Officer, Microsoft Corporation Author Joe Duffy has risen to the challenge of explaining how to write software that takes full advantage of concurrency and hardware parallelism. In Concurrent Programming on Windows, he explains how to design, implement, and maintain large-scale concurrent programs, primarily using C# and C++ for Windows. Duffy aims to give application, system, and library developers the tools and techniques needed to write efficient, safe code for multicore processors. This is important not only for the kinds of problems where concurrency is inherent and easily exploitable--such as server applications, compute-intensive image manipulation, financial analysis, simulations, and AI algorithms--but also for problems that can be speeded up using parallelism but require more effort--such as math libraries, sort routines, report generation, XML manipulation, and stream processing algorithms. Concurrent Programming on Windows has four major sections: The first introduces concurrency at a high level, followed by a section that focuses on the fundamental platform features, inner workings, and API details. Next, there is a section that describes common patterns, best practices, algorithms, and data structures that emerge while writing concurrent software. The final section covers many of the common system-wide architectural and process concerns of concurrent programming. This is the only book you'll need in order to learn the best practices and common patterns for programming with concurrency on Windows and .NET.

Introduction to Concurrency in Programming Languages

Mastering Concurrency in Python

From Semaphores to Remote Procedure Calls

Parallel and Concurrent Programming with Python 1

The Art of Concurrency

The introduction of functional programming concepts in Java SE 8 was a drastic change for this venerable object-oriented language. Lambda expressions, method references, and streams fundamentally changed the idioms of the language, and many developers have been trying to catch up ever since. This cookbook will help. With more than 70 detailed recipes, author Ken Kousen shows you how to use the newest features of Java to solve a wide range of problems. For developers comfortable with previous Java versions, this guide covers nearly all of Java SE 8, and includes a chapter focused on changes coming in Java 9. Need to understand how functional idioms will change the way you write code? This cookbook--chock full of use cases--is for you. Recipes cover: The basics of lambda expressions and method references Interfaces in the java.util.function package Stream operations for transforming and filtering data Comparators and Collectors for sorting and converting streaming data Combining lambdas, method references, and streams Creating instances and extract values from Java's Optional type New I/O capabilities that support functional streams The Date-Time API that replaces the legacy Date and Calendar classes Mechanisms for experimenting with concurrency and parallelism

Take a deeper dive into the key mechanisms for writing concurrent and parallel programs. Discover how to parallelize a sequential program.

If you have a working knowledge of Haskell, this hands-on book shows you how to use the language's many APIs and frameworks for writing both parallel and concurrent programs. You'll learn how parallelism exploits multicore processors to speed up computation-heavy programs, and how concurrency enables you to write programs with threads for multiple interactions. Author Simon Marlow walks you through the process with lots of code examples that you can run, experiment with, and extend. Divided into separate sections on Parallel and Concurrent Haskell, this book also includes exercises to help you become familiar with the concepts presented: Express parallelism in Haskell with the Eval monad and Evaluation Strategies Parallelize ordinary Haskell code with the Par monad Build parallel array-based computations, using the Repa library Use the Accelerate library to run computations directly on the GPU Work with basic interfaces for writing concurrent code Build trees of threads for larger and more complex programs Learn how to build high-speed concurrent network servers Write distributed programs that run on multiple machines in a network.

In recent years (1985) a number of parallel programming languages have been described and implemented on parallel processor machines. These concurrent programming languages are intended for use by the application programmer to allow him to take maximum advantage of the new parallel architectures becoming available. This dissertation examines the parallel processor environment and then surveys the approaches used by a number of concurrent languages.

The Concurrent C Programming Language

Concurrency in C# Cookbook

Object-oriented programming meets functional reactive to create Scalable and Concurrent programs

Real World Haskell

Concurrent Programming in Java

Learn the art of building intricate, modern, scalable, and concurrent applications using ScalaAbout This Book* Make the most of Scala by understanding its philosophy and harnessing the power of multicores* Get acquainted with cutting-edge technologies in the field of concurrency, through practical, real-world applications* Get this step-by-step guide packed with pragmatic examplesWho This Book Is ForIf you are a Scala programmer with no prior knowledge about concurrent programming, or seeking to broaden your existing knowledge about concurrency, this book is for you. Basic knowledge of the Scala programming language will be helpful. Also if you have a solid knowledge in another programming language, such as Java, you should find this book easily accessible.What You Will Learn* Get to grips with the fundamentals of concurrent programming on modern multiprocessor systems, with a particular focus on the JVM concurrency model* Build high-performance concurrent systems from simple, low-level concurrency primitives* Express asynchrony in concurrent computations with futures and promises* Seamlessly accelerate sequential programs by using data-parallel collections* Design safe, scalable, and easy-to-comprehend in-memory transactional data models* Transparently create distributed applications that scale across multiple machines* Integrate different concurrency frameworks together in large applications* Develop and implement scalable and easy-to-understand concurrent applications in Scala 2.12In DetailScala is a modern, multiparadigm programming language designed to express common programming patterns in a concise, elegant, and type-safe way. Scala smoothly integrates the features of object-oriented and functional languages.In this second edition, you will find an updated coverage of the Scala 2.12 platform. The Scala 2.12 series targets Java 8 and requires it for execution. It starts by introducing you to the foundations of concurrent programming on the JVM, outlining the basics of the Java Memory Model, and then shows some of the classic building blocks of concurrency, such as the atomic variables, thread pools, and concurrent data structures, along with the caveats of traditional concurrency.It then walks you through different high-level concurrency abstractions, each tailored toward a specific class of programming tasks, while touching on the latest advancements of Async programming capabilities of Scala. It also covers some useful patterns and idioms to use the techniques described. Finally, the book presents an overview of when to use which concurrency library and demonstrates how they all work together.

Teaches how to use Haskell's APIs and frameworks for writing both parallel and concurrent programs, and includes code examples and exercises covering the concepts presented.

Write more effective programs that execute multiple instructions simultaneously. Learn advanced techniques for parallel and concurrent programming in Python.

Several carefully revised lectures from the 6th International School on Functional Programming, AFP 2008, are presented in this valuable review. Topics include computation with Delta ML, spider spinning, reduction-based normalization and Haskell programming.

Is Parallel Programming Hard

Parallel and Concurrent Programming with Java 1

Techniques For Multicore and Multithreaded Programming

Scala in Action

C++ Concurrency in Action

In this book, realistic examples show both the situations where threading is valuable and the ways to use threads to improve the modularity and efficiency of a program. The author takes the user behind the scenes to show them how threads work, where to expect problems, and what performance issues exist. Chapters on DCE, real-time, and multiprocessing are included.

Learn how to write scalable and concurrent programs in Scala, a language that grows with you. Key Features Get a grip on the functional features of the Scala programming language Understand and develop optimal applications using object-oriented and functional Scala constructs Learn reactive principles with Scala and work with the Akka framework Book Description Scala is a general-purpose programming language that supports both functional and object-oriented programming. In this concise design and versatility, Scala's applications have been extended to a wide variety of fields such as data science and cluster computing. You will learn to write highly scalable, concurrent, and testable programs to meet everyday software requirements. We will begin by understanding the language basics, syntax, core data types, literals, variables, and more. From here you will be introduced to data structures with Scala and you will learn to work with higher-order functions. Scala's powerful collections framework will help you get the best out of immutable data structures and utilize them effectively. You will then be introduced to concepts such as pattern matching, case classes, and functional programming features. From here, you will learn to work with Scala's object-oriented features. Going forward, you will learn about asynchronous and reactive programming with Scala, where you will be introduced to the Akka framework. Finally, you will learn the interoperability of Scala and Java. After reading this book, you'll be well versed with this language and its features, and you will be able to write scalable, concurrent, and reactive programs in Scala. What you will learn Get to know the reasons for choosing Scala: its use and the advantages it provides over other languages Bring together functional and object-oriented programming constructs to make a manageable application Master basic to advanced Scala constructs Test your applications using advanced testing methodologies such as TDD Select preferred language constructs from the wide variety of constructs provided by Scala Make the transition from the object-oriented paradigm to the functional programming paradigm Write clean, concise, and powerful code with a functional mindset Create concurrent, scalable, and reactive applications utilizing the advantages of Scala Who this book is for This book is for programmers who choose to get a grip over Scala to write concurrent, scalable, and reactive programs. No prior experience with any programming language is required to learn the concepts explained in this book. Knowledge of any programming language would help the reader understanding concepts faster though.

If you're looking to take full advantage of multi-core processors with concurrent programming, this practical book provides the knowledge and hands-on experience you need. The Art of Concurrency is one of the few resources to focus on implementing algorithms in the shared-memory model of multi-core processors, rather than just theoretical models or distributed-memory architectures. The book provides detailed explanations and usable samples to help you transform algorithms from serial to parallel code, along with advice and analysis for avoiding mistakes that programmers typically make when first attempting these computations. Written by an Intel engineer with over two decades of parallel and concurrent programming experience, this book will help you: Understand parallelism and concurrency Explore differences between programming for shared-memory and distributed-memory Learn guidelines for designing

multithreaded applications, including testing and tuning Discover how to make best use of different threading libraries, including Windows threads, POSIX threads, OpenMP, and Intel Threading Building Blocks Explore how to implement concurrent algorithms that involve sorting, searching, graphs, and other practical computations The Art of Concurrency shows you how to keep algorithms scalable to take advantage of new processors with even more cores. For developing parallel code algorithms for concurrent programming, this book is a must.

This easy-to-use, fast-moving tutorial introduces you to functional programming with Haskell. You'll learn how to use Haskell in a variety of practical ways, from short scripts to large and demanding applications. Real World Haskell takes you through the basics of functional programming at a brisk pace, and then helps you increase your understanding of Haskell in real-world issues like I/O, performance, dealing with data, concurrency, and more as you move through each chapter.

Start Concurrent

With Examples in C# and F#

On Concurrent Programming

PThreads Programming

Parallel and Concurrent Programming with Java 2

Parallel programming unlocks a program's ability to execute multiple instructions simultaneously, increases the overall processing throughput, and is key to writing faster and more efficient applications. Curious about how parallel programming works in the real world? In this course, join instructors Barron and Olivia Stone as they introduce the basics of parallel programming in Python, providing the foundational knowledge you need to write more efficient, performant code. Barron

Olivia explain concepts like threading and mutual exclusion in a fun and informative way, relating them to everyday activities you perform in the kitchen. To cement the ideas, they demo them in action using Python. Each lesson is short and practical, driving home the theory with hands-on techniques.

Modern Java Recipes

A Thread Monkey's Guide to Writing Parallel Applications

6th International School, AFP 2008, Heijlen, The Netherlands, May 19-24, 2008, Revised Lectures